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Bozemen, Montana

MONTANA WATER SUPPLY OUTLOOK

Snowpack and Streamflow Forecasts as of April 1, 1983

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The Montana Water Supply Outlook is a publication of the U.S. Soil Conservation Service. The SCS administers the Cooperative Snow Survey Program in cooperation with other federal, state and private agencies, organizations, and individuals.

The report is prepared by SCS, Snow Survey and Water Supply Forecast Staff, P.O. Box 98, Bozeman, Montana.

FEDERAL STATE PRIVATE
COOPERATIVE SNOW SURVEYS
Furnishes the basic data necessary for forecasting water supply for irrigation, domestic and municipal water supply, hydro electric power generation, navigation, mining and industry
"The Conservation of Water begins with the Snow Surveys"

****

Snow survey program to be reorganized

The Soil Conservation Service is reorganizing the Snow Survey and Water Supply Forecast Program to improve service and reduce costs.

The reorganization will impact Montana operations in three major ways. One change will be in the scope of the Bozeman office responsibilities. The reorganization divides data collection and forecasting responsibilities. It also centralizes data collection responsibilities. Montana will now collect snowpack data for Montana and northern Wyoming. The addition of Wyoming will increase Montana SCS responsibility for automated SNOTEL sites from 65 to 108 and for manual courses from 250 to 310.

The second part of the reorganization affecting Montana is the centralization of forecasting responsibilities. A unit in Portland, Oregon will analyze and produce regional and statewide forecasts for the western states after October 1984. Until then, Montana will continue to produce its own water supply outlook.

The reorganization also calls for a reduction in nonessential manually read snow courses by 1986. The first step---slated for 1983-- is to study and evaluate the importance of manual courses to accurate forecasting. The plan is to reduce the number of manual snow courses or readings, or both, to a minimum level compatible with user needs. No important courses will be eliminated unless reliable alternative data is available.

For more information on the reorganization, write to Phil Farnes, SCS Snow Survey Supervisor, P. O. Box 98, Bozeman, MT 59715, or call him at (406) 587-5271 Ext. 4270.

Snowpack shows little improvement

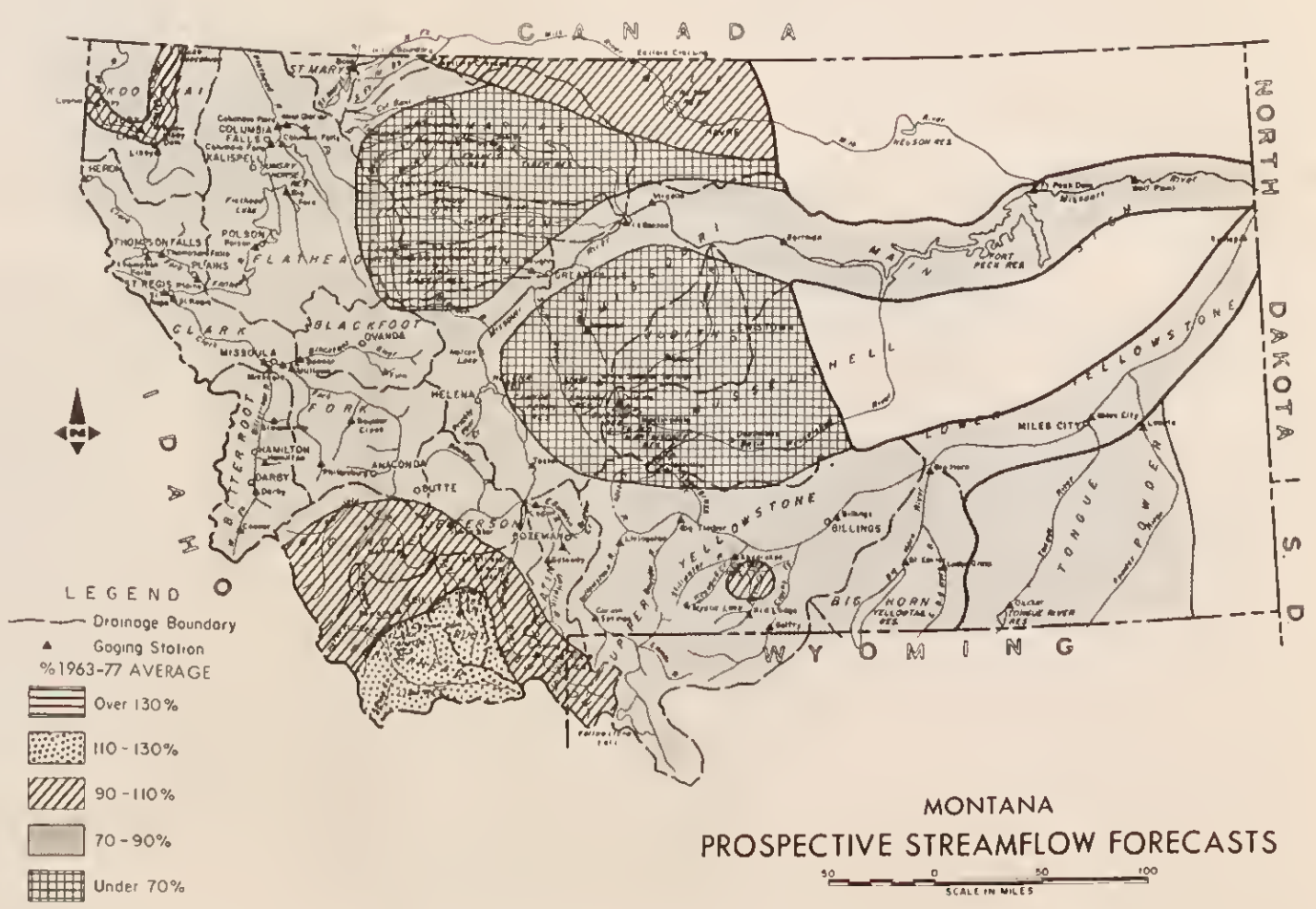
The southwest corner of Montana continues to receive good moisture from storms passing to the south. Two good storm systems out of the east created an upslope condition and deposited heavy snow in the Red Lodge area and on the east slope of the Crazy Mountains. Some areas in northwest Montana continue to receive fairly good moisture. The remaining areas of the state continue to show deficit snowpack with central and north central Montana having the poorest snow conditions. The snowpack accumulation period is nearing its peak for the season. Many low elevations have already experienced melt during March.

No significant changes are expected in this season's snowpack unless April snowfall is extremely heavy.

Variable forecasts throughout state

Most drainages in Montana are forecast to produce below average runoff during the spring and summer months. The Milk River system, where diversions from the St. Mary's River make up the major part of the streamflow, and the inflow to Cooney Reservoir near Red Lodge are forecast near average. The southwest corner continues to get good moisture and flows are forecast to be average or above average.

Extremely low runoff is predicted for a large part of central and north central Montana. Although forecasts do not indicate record low flows in this area, they are in the lowest three to five years of record. Most of the low area is in locations that can have large spring rains and some shortages can be eliminated with average or above average spring moisture. However, if present weather patterns continue, shortages will be widespread. Moderate to severe shortages of irrigation water supplies are anticipated for most drainages west of the Divide and in parts of the Yellowstone River system.



Yellowstone River Drainage

STREAMFLOW FORECASTS

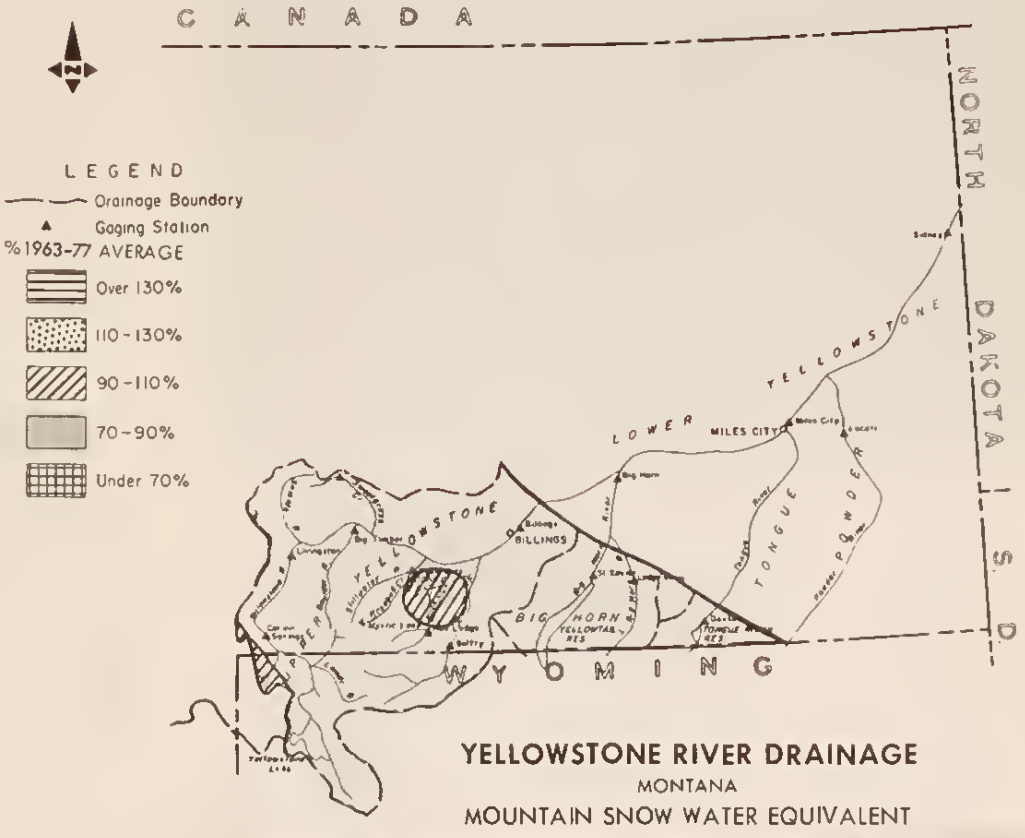
BASIN STREAM and/or FORECAST POINT	PERIOD	THIS YEAR FORECAST Thousand Acre Feet	THIS YEAR FORECAST Percent of Average	PAST RECORD THOUSAND ACRE FEET Last Year	PAST RECORD THOUSAND ACRE FEET Average
		April - September			
YELLOWSTONE RIVER at Corwin Springs		1790	85	2497	2,102
YELLOWSTONE RIVER near Livingston		2040	83		2,471
BOULDER RIVER at Big Timber		330	79		416
STILLWATER near Absarokee (1)		565	86		660
CLARKS FORK RIVER near Belfry		520	81		644
ROCK CREEK near Red Lodge		Streamflow measurements			118
INFLOW COONEY RESERVOIR near Boyd (2)		59.0	91		64.5
YELLOWSTONE RIVER at Billings		3872	83	5171	4,682
BIGHORN RIVER near St. Xavier (3)		1566	77	2116	2,034
LITTLE BIGHORN RIVER near Hardin		157	80	112	196
TONGUE RIVER near Decker		216	75		288
YELLOWSTONE RIVER at Miles City (4)		5642	79		7,142
POWDER RIVER at Moorhead		185	73		253
YELLOWSTONE RIVER near Sidney (5)		6111	78		7,806

BASIN STREAM and/or FORECAST POINT	PERIOD	THIS YEAR FORECAST Thousand Acre Feet	THIS YEAR FORECAST Percent of Average	PAST RECORD THOUSAND ACRE FEET Last Year	PAST RECORD THOUSAND ACRE FEET Average
		April - July			
YELLOWSTONE RIVER at Corwin Springs		1495	85	1978	1,749
YELLOWSTONE RIVER near Livingston		1690	83		2,048
BOULDER RIVER at Big Timber		305	80		382
STILLWATER near Absarokee (1)		480	86		555
CLARKS FORK RIVER near Belfry		465	82		564
ROCK CREEK near Red Lodge		discontinued by USGS			91.4
INFLOW COONEY RESERVOIR near Boyd (2)		49.0	93		52.5
YELLOWSTONE RIVER at Billings		3300	83	4307	3,979
BIGHORN RIVER near St. Xavier (3)		1430	77	1693	1,861
LITTLE BIGHORN RIVER near Hardin		140	80	96.6	174
TONGUE RIVER near Decker		197	75		263
YELLOWSTONE RIVER at Miles City (4)		4940	79		6,243
POWDER RIVER at Moorhead		170	73		234
YELLOWSTONE RIVER near Sidney (5)		5310	78		6,805

(1) Adjusted for storage in Mystic Lake.
(2) Adjusted for storage in Cooney Reservoir.
(3) Adjusted for storage in Buffalo Bill, Boysen, Bull Lake, Pilot Butte and Bighorn Reservoirs.
(4) Adjusted for storage in Bull Lake, Buffalo Bill, Boysen, Pilot Butte, Bighorn and Tongue River Reservoirs.
(5) Adjusted for reservoirs shown in (4) and diversions into the Lower Yellowstone Canal.

ALL FORECASTS PREPARED IN COOPERATION WITH THE NATIONAL WEATHER SERVICE

U.S. DEPARTMENT of AGRICULTURE
SOIL CONSERVATION SERVICE
CONSERVATION OF WATER BEGINS WITH THE SNOW SURVEY



YELLOWSTONE RIVER DRAINAGE
MONTANA
MOUNTAIN SNOW WATER EQUIVALENT

SUMMARY of SNOW MEASUREMENTS
(COMPARISON WITH PREVIOUS YEARS)

RIVER BASIN and/or SUB-WATERSHED	Number of Courses Averaged	THIS YEAR'S SNOW WATER AS PERCENT OF Last Year	THIS YEAR'S SNOW WATER AS PERCENT OF Average +
Upper Yellowstone ab Livingston	21	71	78
Shields	8	84	78
Boulder & Stillwater	10	76	76
Rock Creek & Clark's Fork	17	86	84
Yellowstone (ab Bighorn River)	56	78	79
Bighorn/Wyoming	19	74	80
Little Bighorn	3	87	71
Bighorn (Total)	22	76	79
Tongue	9	83	80
Powder	7	85	86
Yellowstone (Total)	94	78	80

WATER SUPPLY OUTLOOK
Expressed as "Poor, Fair, Average, Excellent" With Respect to Usual Supply

STREAM or AREA	Flow Period Spring Season	Flow Period Late Season
Yellowstone at Livingston	Fair	Fair
Shields	Fair	Poor
Boulder	Fair	Fair
Sweetgrass - Big Timber	Fair	Poor
Stillwater	Fair	Fair
Rock Creek	Fair	Fair
Clark's Fork	Fair	Fair
Yellowstone above Bighorn	Fair	Fair
Bighorn	Fair	Fair
Little Bighorn	Fair	Fair
Tongue	Fair	Poor
Powder	Fair	Poor
Lower Yellowstone	Fair	Fair

Snowpack changes little

During the last month, two major upslope storms approached the Yellowstone headwaters from the east and deposited large amounts of snow in the Red Lodge area. Lesser amounts fell on the east side of the Crazy Mountains.

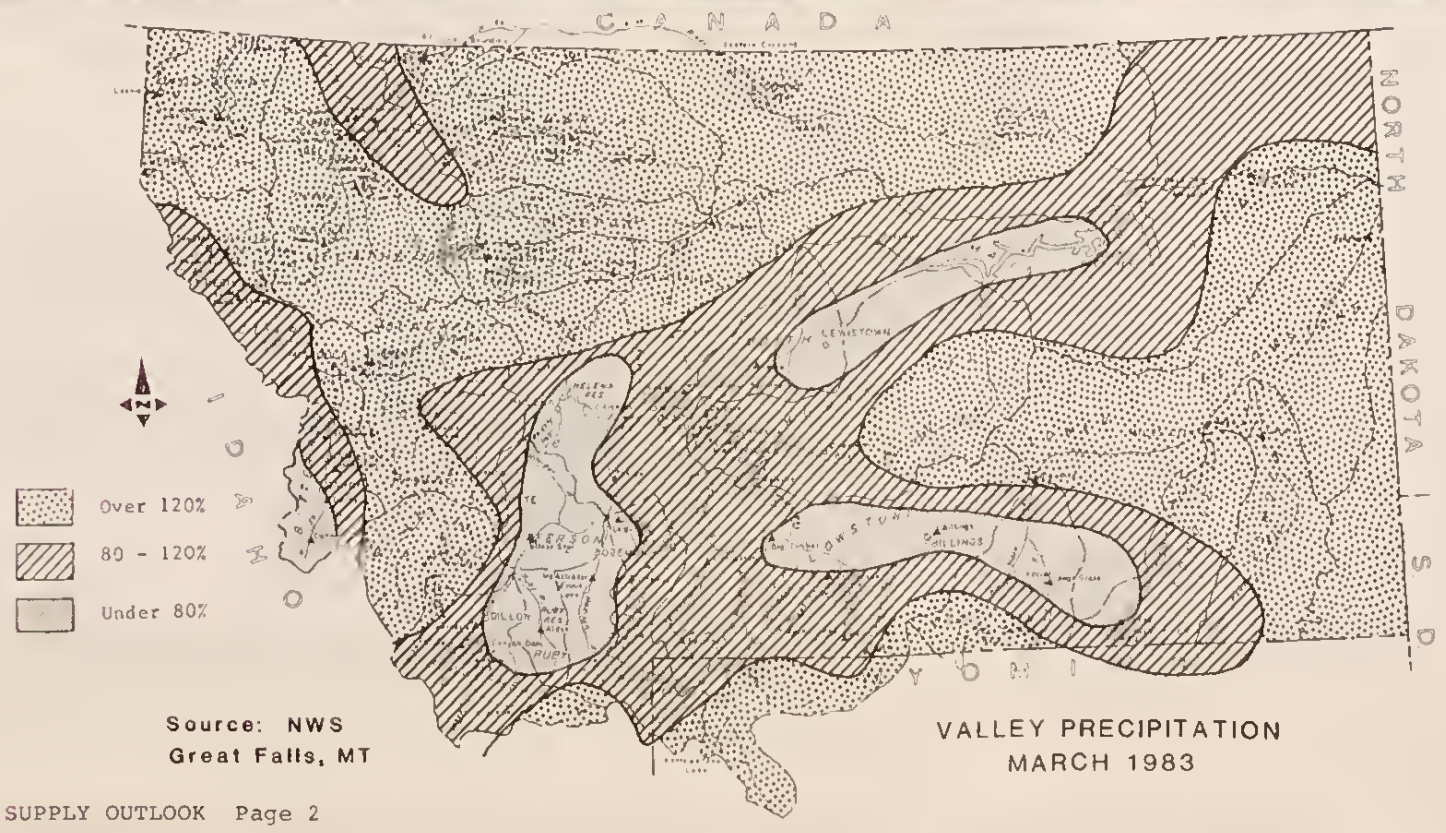
The area around Red Lodge now has a near to above average snowpack. Some snowfall has occurred in other areas but most locations still have only 75 to 85 percent of average snowpack.

Some melt has occurred in lower elevations with most valley areas and south-facing foothills and slopes bare of snow.

Forecasts remain low

Forecasts for spring and summer runoff are generally a little lower than those issued last month except for the Red Lodge Creek Drainage.

Streamflows will be adequate for most early season irrigation but river flows will drop sooner than usual with shortages of irrigation water supplies expected by early July and continuing through the irrigation season. Shortages will be most noticeable on smaller heavily used streams such as the Clark's Fork River and Rock Creek.



Source: NWS
Great Falls, MT

VALLEY PRECIPITATION
MARCH 1983

Missouri River & Hudson Bay Drainages

STREAMFLOW FORECASTS

BASIN STREAM and/or FORECAST POINT	THIS YEAR FORECAST Thousand Acre Feet	THIS YEAR FORECAST Percent of Average	PAST RECORD THOUSAND ACRE FEET Last Year	PAST RECORD THOUSAND ACRE FEET Average
PERIOD	April - September			
RED ROCK RIVER near Monida (1)	142	129	150	110
BEAVERHEAD RIVER near Grant (2)	191	112	228	171
BEAVERHEAD RIVER at Barratts (2)	237	105		226
RUBY RIVER near Alder	117	111		105
BIG HOLE RIVER near Melrose	715	90		792
BOULDER RIVER near Boulder	Streamflow measurements			103
WILLOW CREEK near Harrison	24.5	114		21.5
MADISON RIVER near Grayling (3)	542	104	584	523
MADISON RIVER near McAllister (4)	920	103	1024	892
GALLATIN RIVER near Gateway	496	87	592	572
INFLOW MIDDLE CREEK RESERVOIR near Bozeman (5)	23.6	78		30.3
HYALITE CREEK near Bozeman (6)	37.9	80		47.4
GALLATIN RIVER at Logan	505	78		649
MISSOURI RIVER at Toston (7)	2385	89	3470	2,671
SHEEP CREEK near White Sulphur Springs	14.5	64	24.5	22.8
SUN RIVER at Gibson Dam (8)	352	61	596	580
BELT CREEK near Monarch	89.0	61		146
MISSOURI RIVER at Fort Benton (9)	3345	81		4,148
TWO MEDICINE CREEK near Browning (10)	180	69		259
BADGER CREEK near Browning	90.0	68		133
MARIAS RIVER near Shelby	370	64	521	577
MISSOURI RIVER at Virgelle (11)	3990	83		4,793
MISSOURI RIVER near Landusky (11)	4425	85		5,214
NORTH FORK MUSSELSHELL RIVER near Delpine	3.6	56		6.4
SOUTH FORK MUSSELSHELL RIVER above Martinsdale	33.0	54		61.5
MISSOURI RIVER below Fort Peck Dam (11)	4125	84		4,929
MILK RIVER at Eastern Crossing*	263	105		250
MILK RIVER at Eastern Crossing (12)*	81.0	98		83
INFLOW LAKE SAKAKAWEA, ND (11)	11165	83		13,450
SASKATCHEWAN RIVER BASIN				
SWIFTCURRENT CREEK at Sherburne (13)	118	89	133	132
ST. MARY'S RIVER near Babb (13)	445	89		498

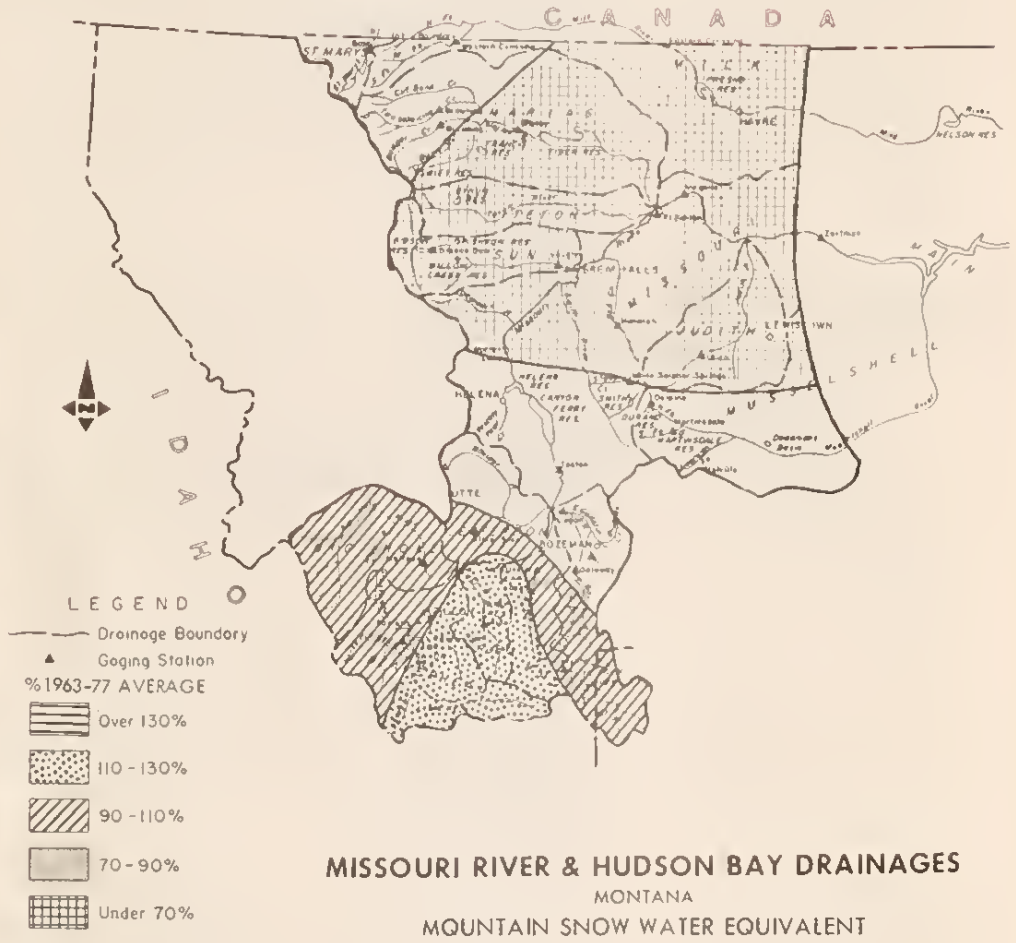
BASIN STREAM and/or FORECAST POINT	THIS YEAR FORECAST Thousand Acre Feet	THIS YEAR FORECAST Percent of Average	PAST RECORD THOUSAND ACRE FEET Last Year	PAST RECORD THOUSAND ACRE FEET Average
PERIOD	April - July			
RED ROCK RIVER near Monida (1)	135	131	135	103
BEAVERHEAD RIVER near Grant (2)	165	111	194	148
BEAVERHEAD RIVER at Barratts (2)	208	106		196
RUBY RIVER near Alder	100	112		89.0
BIG HOLE RIVER near Melrose	660	90		730
BOULDER RIVER near Boulder	discontinued			96.7
WILLOW CREEK near Harrison	22.0	115		19.2
MADISON RIVER near Grayling (3)	430	105	456	409
MADISON RIVER near McAllister (4)	732	104	797	706
GALLATIN RIVER near Gateway	425	87	503	488
INFLOW MIDDLE CREEK RESERVOIR near Bozeman (5)	20.4	78		26.2
HYALITE CREEK near Bozeman (6)	33.0	80		41.0
GALLATIN RIVER at Logan	435	78		557
MISSOURI RIVER at Toston (7)	2090	90	3072	2,330
SHEEP CREEK near White Sulphur Springs	12.5	63	21.0	19.8
SUN RIVER at Gibson Dam (8)	318	60	544	529
BELT CREEK near Monarch	80	60		134
MISSOURI RIVER at Fort Benton (9)	2940	81		3,640
TWO MEDICINE CREEK near Browning (10)	172	70		244
BADGER CREEK near Browning	78.0	67		116
MARIAS RIVER near Shelby	340	64	494	532
MISSOURI RIVER at Virgelle (11)	3515	83		4,238
MISSOURI RIVER near Landusky (11)	3900	85		4,586
NORTH FORK MUSSELSHELL RIVER near Delpine	3.0	55		5.5
SOUTH FORK MUSSELSHELL RIVER above Martinsdale	31.5	55		57.6
MISSOURI RIVER below Fort Peck Dam (11)	3680	84		4,381
MILK RIVER at Eastern Crossing*				
MILK RIVER at Eastern Crossing (12)*				
INFLOW LAKE SAKAKAWEA, ND (11)	10160	83		12,239
SASKATCHEWAN RIVER BASIN				
SWIFTCURRENT CREEK at Sherburne (13)	102	89	117	115
ST. MARY'S RIVER near Babb (13)	378	89		426

*March-September forecast

(1) Adjusted for storage in Lima Reservoir.
(2) Adjusted for storage in Lima and Clark Canyon Reservoirs.
(3) Adjusted for storage in Hebgen Lake.
(4) Adjusted for storage in Hebgen Lake and Ennis Lake.
(5) Sum of West Fork Hyalite Creek and East Fork Hyalite Creek above the Reservoir.
(6) Adjusted for storage in Middle Creek Reservoir.
(7) Adjusted for storage in Lima, Hebgen, Ennis & Clark Canyon Reservoirs.
(8) Adjusted for storage in Gibson Reservoir & diversions.
(9) Adjusted for storage in Lima, Clark Canyon, Hebgen, Ennis, Gibson, Pishkun, Willow Creek & Canyon Ferry Reservoirs.
(10) Adjusted for storage in Two Medicine Reservoir & diversions in Two Medicine Canal.
(11) Adjusted for all upstream reservoirs.
(12) Flow at Eastern Crossing minus St. Mary's Canal.
(13) Adjusted for storage in Lake Sherburne.

ALL FORECASTS PREPARED IN COOPERATION WITH THE NATIONAL WEATHER SERVICE

Snowfall improved in some areas during March but snow depths are still below average in many drainages.



MISSOURI RIVER & HUDSON BAY DRAINAGES
MONTANA
MOUNTAIN SNOW WATER EQUIVALENT

WATER SUPPLY OUTLOOK

Expressed as "Poor, Fair, Average, Excellent" With Respect to Usual Supply

STREAM or AREA	Flow Period: Spring Season	Flow Period: Late Season
Beaverhead	Exc	Avg
Ruby	Exc	Avg
Big Hole	Avg	Avg
Boulder	Fair	Poor
Jefferson	Avg	Fair
Madison	Avg	Avg
Gallatin	Avg	Fair
West-Side Missouri	Fair	Poor
Smith-Belt	Fair	Poor
Sun	Poor	Poor
Teton	Poor	Poor
Marias	Fair	Poor
Judith	Poor	Poor
Musselshell	Fair	Poor
Milk	Avg	Avg
Bear Paws	Fair	Fair
St. Mary's	Fair	Fair

SUMMARY of SNOW MEASUREMENTS
(COMPARISON WITH PREVIOUS YEARS)

RIVER BASIN and/or SUB-WATERSHED	Number of Courses Averaged	THIS YEAR'S SNOW WATER AS PERCENT OF: Last Year	THIS YEAR'S SNOW WATER AS PERCENT OF: Average +
Beaverhead	25	100	117
Ruby	12	103	114
Big Hole	22	80	96
Boulder	13	69	83
Jefferson	72	89	105
Madison	31	88	103
Gallatin	23	83	88
Missouri Headwater	126	87	101
West-side Missouri (Toston-Cascade)	9	65	75
Smith-Belt-Arrow	8	72	74
Missouri Main-stem	17	69	74
Teton & Sun	10	53	64
Marias	4	59	70
Marias-Teton-Sun	14	55	67
Judith-Musselshell	17	74	72
Milk	7	48	53
Bear Paws	6	28	25
Missouri (Total)	174	82	93
Saskatchewan			
St. Mary's	3	80	85
Bow River in Alberta	15	84	84

Snowpack varies

Above average snowfall continues in the southwestern portion of the drainage and remains below average in the drainages of central Montana. After the April 1, 1983, snow surveys, the Easter weekend snowstorm dropped 1 to 2 inches of water equivalent in and around Bozeman. Other southwestern mountain areas received from one-half to one inch of moisture from this storm.

Headwaters of the Red Rock, Ruby and parts of the Madison River drainages have well above average snowpack. Snow in the remaining areas of the Missouri River headwaters is generally near average. Conditions deteriorate on downstream tributaries where the water stored in the snowpack is only one-half to two-thirds of average.

Conditions improve in the extreme northwest where the St. Mary's River headwaters in Glacier National Park have snowpack nearer to but still below average. Most low elevations showed some melt during March.

Southwest forecasts improve

Forecasts of spring and summer runoff have been increased on most southwest streams. Above average runoff is expected from the Red Rock, Beaverhead and Ruby Rivers. Adjacent streams are predicted to have flows near to a little below average. Downstream tributaries are forecast to have below average runoff with some central Montana drainages expected to produce only one-half their normal runoff.

Irrigation water supply shortages will be common by late June in all areas of central Montana not having stored water.

Some late season irrigation water shortages may occur on the Gallatin and Big Hole Rivers but adequate irrigation water supplies should be available into mid-July.

SNOW SURVEY DATA

SNOW April 1, 1983

DRAINAGE BASIN and/or SNOW COURSE NAME	Elevation	THIS YEAR Date of Survey	THIS YEAR Snow Depth (inches)	THIS YEAR Water Content (inches)	PAST RECORD Water Content (inches) Last Year	PAST RECORD Water Content (inches) Average
ABUNDANCE LAKE	8800	3/31	66	20.8	25.5	22.5
AMBROSE	6480	3/27	33	11.1	17.0	14.4
ARCH FALLS	7350	3/29	42	10.8	14.2	14.4
ASHLEY DIVIDE	4820	3/30	14	4.4	8.2	-
ASHLEY LAKE	4000	3/30	13	4.3	6.7	-
BADGER PASS	6900	4/04	79	29.6	46.4	41.7
BADGER PASS PILLOW	6900	4/01	SP	26.1	41.8	-
BALD RIDGE	7500	3/30	38	10.0	13.3	14.6
BANFIELD MOUNTAIN	5600	3/28	59	24.0	28.4	25.8
BANFIELD MOUNTAIN PILLOW	5600	3/28	SP	20.6	26.9	22.5
BAREE CREEK	5500	4/01	116	45.5	54.5	50.3
BAREE MIDWAY	4600	3/31	95	37.6	39.6	38.8
BAREE TRAIL	3800	4/01	9	3.6	9.2	9.8
BARKER LAKES	8250	3/25	54	16.4	15.9	-
BARKER LAKES PILLOW	8250	4/01	SP	17.9	17.7	-
BASIN CREEK	7180	3/28	46	11.4	11.8	8.4
BASIN CREEK PILLOW	7180	4/01	SP	9.4	11.0	-
BASSOO PEAK	5150	3/31	20	7.3	10.2	11.5
BEAGLE SPRINGS	8850	3/31	40	8.6	12.5	-
BEAGLE SPRINGS PILLOW	8850	4/01	SP	9.0	12.7	-
BEAR BASIN	8150	3/28	69	21.6	25.4	23.3
BEAR PAW SKI AREA	5200	3/31	8	2.3	8.4	7.3
BEAVER LAKE	5900	4/04	49	15.8	30.2	25.8
BERRY MEADOW	7300	4/04	30	8.0	10.6	8.4
BIG COULEE	5100	3/30	12	3.6	-	8.3
BIG CREEK	6750	4/04	126	49.3	51.6	47.6
BIG SKY	7700	4/01	57	15.6	21.2	17.3
BIG SKY MEADOW	6350	3/28	29	10.2	12.6	10.0
BIG SNOWY	7150	3/28	52	16.6	19,3	24.1
BLACK BEAR	7950	3/30	124	48.4	57.4	44.1
BLACK BEAR PILLOW	7950	3/30	SP	42.1	50.1	40.0
BLACK MOUNTAIN	7750	3/28	51	14.5	18.1	-
BLACK PINE	7100	3/30	36	10.6	18.6	15.5
BLACK PINE PILLOW	7100	3/30	SP	11.0	19.6	16.0
BLOODY DICK	7600	3/31	47	14.0	18.2	14.8
BLOODY DICK PILLOW	7600	3/31	SP	12.8	16.5	-
BLUE LAKE	5900	4/04	52	18.9	33.6	28.0
BOIS SOIS	8000	3/29	36	8.3	6.8	9.1
BOULDER MOUNTAIN	7950	3/28	60	19.0	21.3	20.7
BOULDER MOUNTAIN PILLOW	7950	4/01	SP	22.8	25.3	-
BOX CANYON	6670	4/01	27	9.0	12.9	14.2
BOX CANYON PILLOW	6670	4/01	SP	7.1	12.7	-
BOXELDER CREEK	5100	3/31	0	.0	-	8.6
BRANHAM LAKES	8850	3/28	100	33.2	35.6	31.9
BRIDGER BOWL	7250	3/31	64	22.5	28.2	30.2
BRIDGER BOWL PILLOW	7250	3/31	SP	22.1	26.4	29.5
BRISTOW CREEK	3900	3/28	13	5.7	13.0	12.6
BRUSH CREEK TIMBER	5000	4/01	29	8.8	11.0	10.6
BULL MOUNTAIN	6600	3/31	21	6.4	8.6	6.7
CABIN CREEK	5200	3/27	9	2.4	7.4	7.2
CALL ROAD	8050	3/30	50	14.6	13.1	13.1
CALVERT CREEK	6450	4/04	41	11.8	15.4	13.2
CALVERT CREEK PILLOW	6450	4/01	SP	8.9	12.4	9.8
FISHER CREEK PILLOW	9100	3/29	SP	28.5	41.8	38.7
FIVE-BULL	5700	4/01	11	3.9	9.7	7.6
FLATTOP MOUNTAIN PILLOW	6300	4/01	SP	45.6	47.8	51.6
FLEECER RIDGE	7500	3/31	42	12.1	14.6	12.2
FOOLHEN	8280	3/31	59	17.4	20.6	19.1
FOREST LAKE	6400	3/29	33	9.8	11.9	12.3
FOUR MILE	6900	3/31	35	10.9	9.8	9.3
FOURTH OF JULY	3450	4/01	13	4.8	7.3	-
FREIGHT CREEK	6000	4/04	32	10.1	21.5	17.2
FRIDAY HILL	4620	4/01	56	22.4	24.6	-
FROHNER MEADOWS	6480	3/28	24	6.8	11.2	9.2
FROHNER MEADOWS PILLOW	6480	3/28	SP	7.3	11.1	10.0
GARVER CREEK	4250	3/28	29	11.2	12.4	12.0
GARVER CREEK PILLOW	4250	3/28	SP	10.6	11.6	10.8
GIBBONS PASS	7100	3/28	66	24.8	30.9	24.8
GOAT MOUNTAIN	7000	3/28	22	6.3	13.7	11.6
GOLD CREEK LAKE	7200	3/28	51	14.4	19.4	17.7
GOLD STONE	8100	3/31	58	18.0	22.8	18.9
GRASSHOPPER	7000	3/29	21	5.8	6.7	6.4
GRAVE CREEK	4300	3/28	44	14.8	18.6	19.2
GRAVE CREEK PILLOW	4300	3/28	SP	16.6	17.9	18.7
GRIFFIN CREEK DIVIDE	5150	3/31	30	10.0	14.0	12.2
GRIZZLY PEAK	8640	3/28	69	19.1	14.1	17.9
GUNSIGHT LAKE	6300	4/04	87	32.2	47.9	42.7
HAND CREEK	5030	4/01	40	11.8	15.6	14.1
HAND CREEK PILLOW	5030	4/01	SP	8.1	18.8	-
HAWKINS LAKE	6450	3/28	79	32.1	36.0	34.2
HAWKINS LAKE PILLOW	6450	3/28	SP	28.1	31.7	31.6
HAYMAKER	8050	3/30	42	11.0	14.4	13.8
HEART LAKE TRAIL	4800	3/29	38	15.4	24.2	23.8
HEBGEN DAM	6550	3/29	46	15.5	16.4	12.5
HELL ROARING DIVIDE	5770	3/31	78	29.3	34.2	34.4
HERRIG JUNCTION	4850	3/30	70	25.3	33.2	-
HIGHWOOD DIVIDE	5650	3/30	22	7.0	-	10.6
HIGHWOOD STATION	4600	4/05	3	0.7	-	4.6
HOLBROOK	4530	4/01	15	4.8	11.3	10.7
HOOD MEADOW	6600	3/29	34	8.9	12.4	12.4
HOODOO BASIN	6000	3/29	109	46.2	65.0	53.6
HOODOO BASIN PILLOW	6000	4/01	SP	41.9	54.3	51.9
HOODOO CREEK	5900	3/29	100	41.4	58.5	49.9
INDEPENDENCE	7850	4/01	47	15.7	19.8	20.3
INTERGAARD	6450	3/31	23	6.4	11.6	9.4
JACK CREEK	7500	3/31	26	7.8	8.6	6.5
JAHNKE LAKE TRAIL	7200	3/30	39	10.8	15.7	10.5
JOHNSON PARK	6450	3/28	18	4.8	10.0	7.1
KEELER CREEK	3300	3/28	17	6.6	13.3	11.5
KINGS HILL	7500	3/31	36	10.8	15.3	15.8
KISHENEHN	3890	3/29	18	5.1	10.0	8.2
KIWANIS CAMP	3720	3/31	0	.0	.0	1.6
KRAFT CREEK PILLOW	4750	4/01	SP	9.8	17.1	-
LAKE CREEK	6100	3/30	33	10.5	9.5	10.3
LAKEVIEW CANYON	6930	3/31	61	20.2	13.2	13.8
LAKEVIEW RIDGE	7400	3/31	57	19.2	13.4	12.1
LAKEVIEW RIDGE PILLOW	7400	4/01	SP	22.0	13.9	-
LEMHI PASS	7480	3/29	27	7.8	10.4	9.9
LEMHI RIDGE	8100	3/31	37	9.3	12.8	10.9
LEMHI RIDGE PILLOW	8100	3/30	SP	9.1	14.1	11.0
LICK CREEK	6860	3/29	35	9.2	12.2	11.3
CAMP MISERY	6400	3/29	118	49.4	50.3	52.0
CAMP SENIA	7890	3/29	31	7.4	3.2	7.7
CARROT BASIN	9000	3/28	109	37.1	50.6	39.5
CARROT BASIN PILLOW	9000	3/28	SP	31.3	33.3	29.8
CARTER CREEK	7400	3/30	27	7.8	6.9	6.6
CASHE CREEK PILLOW	7800	4/01	SP	10.0	12.4	-
CEDAR GROVE	4100	3/28	24	9.4	12.8	14.2
CHESSMAN RESERVOIR	6200	3/28	15	3.4	4.8	4.2
CHICKEN CREEK	4060	3/30	27	11.1	15.8	-
CLOVER MEADOW	8600	3/30	65	20.0	19.0	19.7
CLOVER MEADOW PILLOW	8600	4/01	SP	13.1	21.7	-
COLE CREEK	7850	3/28	74	20.6	16.0	19.6
COLE CREEK PILLOW	7850	3/28	SP	18.3	15.3	19.4
COLLEY CREEK	6300	3/29	19	5.8	10.6	9.8
COMBINATION	5600	3/30	14	4.8	8.8	6.5
COMBINATION PILLOW	5600	3/30	SP	4.5	9.4	6.6
COOKE STATION	8150	3/29	55	17.4	23.6	21.3
COPPER BOTTOM	5200	4/01	15	5.4	16.7	11.9
COPPER BOTTOM PILLOW	5200	4/01	SP	6.5	14.2	14.8
COPPER CAMP	6950	4/01	66	24.5	40.8	34.2
COPPER CAMP PILLOW	6950	4/01	SP	23.5	43.0	42.8
COPPER CREEK	5700	4/01	30	10.9	22.1	16.1
COPPER LAKE CREEK	6100	4/01	57	20.7	31.5	26.3
COPPER MOUNTAIN	7700	3/30	45	11.2	16.4	12.2
COTTONWOOD CREEK	6400	3/28	27	7.4	10.3	9.0
COYOTE HILL	4200	3/29	16	5.2	11.8	10.7
CREVICE MOUNTAIN	8400	3/30	37	9.0	14.9	11.5
CRYSTAL LAKE	6100	3/28	33	9.4	13.6	15.7
CRYSTAL LAKE PILLOW	6100	4/01	SP	10.2	12.3	-
DAD CREEK LAKE	8400	3/31	55	13.6	17.5	15.8
DAISY PEAK	7600	3/28	37	9.2	14.2	12.0
DALY CREEK	5780	3/27	31	10.6	16.4	13.1
DALY CREEK PILLOW	5780	4/01	SP	13.8	18.3	-
DARKHORSE LAKE	8600	3/31	74	24.6	31.6	30.1
DARKHORSE LAKE PILLOW	8600	4/01	SP	19.4	30.2	-
DAVIS CREEK	5400	3/28	64	26.8	30.2	27.1
DEADMAN CREEK	6450	3/31	30	9.4	11.8	12.6
DEADMAN CREEK PILLOW	6450	3/31	SP	6.2	12.0	11.1
DESERT MOUNTAIN	5600	3/28	40	12.2	17.4	17.3
DEVILS SLIDE	8100	3/29	70	21.8	25.3	24.6
DISCOVERY BASIN	7050	3/29	33	9.0	13.8	11.9
DIVIDE	7900	3/30	53	15.5	14.2	12.2
DIVIDE PILLOW	7900	3/30	SP	14.5	17.2	12.8
DIX HILL	6400	3/27	20	7.3	14.2	10.4
EAGLE CREEK	7000	3/29	36	11.4	15.6	16.1
EAST BOULDER S	9250	3/30	81	26.5A	36.5	33.6
EAST FORK R.S.	5400	3/28	9	2.6	8.6	6.7
EL DORADO MINE	7800	3/28	66	19.8	26.0	23.8
ELK HORN SPRINGS	7800	3/29	36	9.0	11.5	10.1
ELK PEAK	8000	3/29	53	14.3	18.4	18.7
EMERY CREEK	4350	3/28	41	12.4	17.7	17.1
EMERY CREEK PILLOW	4350	3/28	SP	16.8	18.6	-
FAITY CREEK	5500	4/04	71	25.7	29.0	25.1
FISH CREEK	8000	3/28	52	14.5	14.4	9.8
FISHER CREEK	9100	3/29	88	31.9	44.6	41.3
LICK CREEK PILLOW	6860	3/29	SP	9.5	11.8	11.1
LITTLE PARK	7400	3/28	55	16.1	19.7	17.6
LOGAN CREEK	4300	4/01	18	5.2	9.1	7.7
LONE MOUNTAIN	8880	3/31	74	25.8	29.0	24.6
LOST HORSE	5940	4/01	77	28.8	45.2	35.2
LOST SOUL	4800	3/28	40	15.0	20.4	16.8
LOWER TWIN	7900	3/31	74	25.1	25.6	22.8
LOWER TWIN PILLOW	7900	4/01	SP	24.4	22.2	-
LUBRECHT FLUME	4800	4/04	0	.0	8.5	6.5
LUBRECHT FLUME PILLOW	4800	4/01	SP	1.0	9.3	6.4
LUBRECHT FOREST # 3	5450	4/04	16	5.0	10.8	7.8
LUBRECHT FOREST # 4	4650	4/04	0	.0	3.8	2.9
LUBRECHT FOREST # 6	4040	4/04	1	.4	4.6	2.9
LUBRECHT HYDROPLOT	4200	4/04	0	.0	7.8	3.7
MADISON PLATEAU	7750	3/30	79	27.3	29.1	23.9
MADISON PLATEAU PILLOW	7750	3/30	SP	26.9	30.4	24.8
MANY GLACIER	4960	3/30	48	18.5	24.5	-
MANY GLACIER PILLOW	4960	4/01	SP	15.6	22.8	-
MARIAS PASS	5250	4/02	45	16.4	25.4	19.2
MAYNARD CREEK	6210	3/31	41	12.7	14.5	14.9
MAYNARD CREEK PILLOW	6210	3/31	SP	10.4	10.0	12.6
MIDDLE MILL CREEK	7850	3/28	65	21.5	18.4	18.2
MILL CREEK	7500	3/29	36	9.0	15.4	14.8
MINERAL CREEK	4000	3/29	38	15.4	22.4	19.2
MONUMENT PEAK	8800	4/01	71	23.4	30.9	29.1
MONUMENT PEAK PILLOW	8800	4/01	SP	17.0	25.0	-
MOULTON RESERVOIR	6850	3/24	26	7.1	9.2	-
MOUNT LOCKHART	6400	3/30	57	18.4	28.0	23.9
MOUNT LOCKHART PILLOW	6400	3/30	SP	16.3	28.4	21.8
MUDD LAKE	7650	4/04	65	21.9	27.0	22.4
MULE CREEK	8300	3/31	52	14.5	20.0	-
MULE CREEK PILLOW	8350	4/01	SP	13.3	18.8	-
NEVADA CREEK	6480	4/01	38	12.8	19.2	-
NEVADA CREEK PILLOW	6480	4/01	SP	11.6	17.5	-
NEW WORLD	6700	3/30	47	14.0	16.0	17.3
NEWTON MOUNTAIN	5600	4/01	101	39.2	42.0	-
NEZ PERCE CAMP	5650	3/31	39	12.8	20.8	16.3
NEZ PERCE CAMP PILLOW	5650	3/31	SP	13.0	21.6	-
NEZ PERCE CREEK	6500	3/30	22	6.4	10.3	7.7
NEZ PERCE PASS	6570	3/31	42	13.7	24.1	19.0
NOISY BASIN	6040	3/29	117	47.3	44.1	48.3
NOISY BASIN PILLOW	6040	4/01	SP	43.7	41.3	41.2
NORTH FK. ELK CREEK	6250	4/04	39	11.4	18.8	13.9
NORTH FK. ELK CREEK PILLOW	6250	4/01	SP	11.1	21.0	14.4
NORTH FORK JOCKO	6330	4/01	103	39.7	54.3	48.4
NORTH MEADOW	7500	3/31	41	11.2	9.2	9.4
NORTHEAST ENTRANCE	7400	4/03	29	8.4	9.7	10.4
NORTHEAST ENTRANCE PILLOW	7400	4/01	SP	8.5	10.9	9.8
NOTCH	8500	3/30	71	22.6	18.4	17.5
OPHIR PARK	7150	3/27	45	15.6	21.4	21.1
PALISADE CREEK	8250	4/01	83	30.0	39.2	33.1
PETERSON MEADOWS	7200	3/31	35	9.3	13.2	11.5
PETERSON MEADOWS PILLOW	7200	3/31	SP	9.7	12.8	12.0
PICKET PIN D	9450	3/30	67	22.0A	30.0	28.5
PICKET PIN LOWER	6200	3/30	13	3.4	2.0	2.4

SNOW SURVEY DATA
Continued

SNOW April 1, 1983

DRAINAGE BASIN and/or SNOW COURSE NAME	Elevation	THIS YEAR Date of Survey	Snow Depth (inches)	Water Content (inches)	PAST RECORD Water Content (inches) Last Year	Average
PICKET PIN MIDDLE	8100	3/30	28	7.2	13.1	13.3
PICKET PIN UPPER	8100	3/30	64	19.4	20.2	23.1
PICKFOOT CREEK	6650	3/28	31	9.7	11.8	-
PICKFOOT CREEK PILLOW	6650	4/01	SP	13.1	12.8	-
PIKE CREEK	5930	3/29	58	22.2	33.9	-
PIKE CREEK PILLOW	5930	3/29	SP	24.0	36.6	-
PIPESTONE PASS	7200	3/30	25	6.2	8.4	6.2
PLACER BASIN F	8830	3/30	63	19.0A	26.5	23.4
PLACER BASIN PILLOW	8830	4/01	SP	14.5	17.6	-
POORMAN CREEK	5100	3/28	79	34.5	44.2	38.0
POORMAN CREEK PILLOW	5100	3/28	SP	27.9	41.2	34.3
PORCUPINE	6500	3/30	24	6.0	8.0	8.8
PORCUPINE PILLOW	6500	3/30	SP	5.5	8.1	-
POTOMAGEON PARK	7150	3/29	48	16.4	18.8	15.9
RED MOUNTAIN	6000	3/31	59	21.0	22.3	20.6
RED TOP	5260	4/01	86	34.2	35.0	-
ROCK CREEK	5600	3/28	29	8.2	6.8	11.0
ROCK CREEK MEADOWS	8160	3/25	67	20.4	28.2	24.8
ROCKER PEAK	8000	4/04	57	13.4	19.0	16.5
ROCKER PEAK PILLOW	8000	4/01	SP	14.0	19.0	16.2
ROCKY BOY	4700	3/31	0	.0	4.6	4.8
ROCKY BOY PILLOW	4700	3/31	SP	3.3	6.7	5.0
SACAJAWEA	6550	3/31	45	14.6	16.4	16.1
SADDLE MOUNTAIN	7940	3/28	70	25.6	33.0	27.3
SADDLE MOUNTAIN PILLOW	7940	3/28	SP	23.5	34.9	28.6
SAND BASIN LOWER	6480	4/06	38	11.6	15.7	-
SENTINEL CREEK	8300	3/29	78	26.4	31.0	25.6
SHOWER FALLS	8100	3/29	71	22.6	26.7	26.7
SHOWER FALLS PILLOW	8100	4/01	SP	23.3	26.7	26.4
SILVER RUN	6630	3/29	21	5.5	3.3	5.8
SILVER RUN PILLOW	6630	3/29	SP	5.4	3.4	-
SKALKAHO SUMMIT	7260	3/26	60	21.2	33.4	28.4
SKALKAHO SUMMIT PILLOW	7260	4/01	SP	22.8	34.4	-
SKYLARK TRAIL PILLOW	6200	4/01	SP	29.6	44.1	-
SLAG-A-MELT LAKE	8750	3/31	85	30.2	32.9	28.7
SLICE ROCK MOUNTAIN	7100	3/29	41	12.8	20.1	19.0
SMUGGLER MINE	6960	3/28	49	13.6	12.4	11.0
SOUTH FORK SHIELDS	8100	3/30	67	22.0	25.0	26.7
SOUTH FORK SHIELDS PILLOW	8100	3/30	SP	15.1	19.0	-
SPOTTED BEAR MOUNTAIN	7000	4/04	34	12.4	18.9	16.3
SPUR PARK	8100	3/31	52	16.0	25.6	23.7
SPUR PARK PILLOW	8100	3/31	SP	17.7	25.2	23.7
STAHL PEAK	6050	3/28	105	41.1	40.0	42.4
STAHL PEAK PILLOW	6050	3/28	SP	34.3	36.4	34.7
STAR LAKE E	9650	3/30	101	36.5A	48.0	46.8
STEMPLE PASS	6600	3/30	32	8.2	14.2	11.5
STORM LAKE	7780	3/31	50	14.4	15.6	15.1
STRYKER BASIN	6180	3/30	90	31.4	42.5	-
STUART MILL	6500	3/31	21	6.2	10.2	7.9
STUART MOUNTAIN	7400	4/01	92	34.6	37.7	34.6
SUCKER CREEK	3960	3/31	0	.0	.0	0.5

SNOW April 1, 1983

DRAINAGE BASIN and/or SNOW COURSE NAME	Elevation	THIS YEAR Date of Survey	Snow Depth (inches)	Water Content (inches)	PAST RECORD Water Content (inches) Last Year	Average
TAYLOR ROAD	4080	3/31	0	.0	.0	3.1
TEN MILE LOWER	6600	3/29	22	5.7	9.3	8.2
TEN MILE MIDDLE	6800	3/29	37	9.2	14.6	13.2
TEN MILE UPPER	8000	3/29	39	10.4	16.8	15.4
TEPEE CREEK	8000	3/30	67	20.2	19.6	16.7
TEPEE CREEK PILLOW	8000	3/30	SP	17.1	18.2	13.9
TIMBERLINE CREEK	8850	3/29	58	15.2	13.0	16.6
TRAIL CREEK	7090	3/31	24	6.6	10.2	9.5
TRINKUS LAKE	6100	4/04	111	43.0	51.0	46.3
TRUMAN CREEK	4060	3/30	0	.0	5.0	-
TV MOUNTAIN	6800	4/01	53	18.2	23.0	20.7
TWELVEMILE CREEK	5600	4/01	43	16.7	29.2	23.4
TWELVEMILE CREEK PILLOW	5600	4/01	SP	15.2	25.2	20.7
TWENTY-ONE MILE	7150	3/30	59	17.9	18.4	19.6
TWIN CREEKS	3580	4/04	14	5.5	13.0	12.1
TWIN LAKES	6510	4/01	95	36.3	54.3	44.9
TWIN LAKES PILLOW	6510	4/01	SP	35.2	53.5	43.5
UPPER HOLLAND LAKE	6200	4/01	80	26.9	39.9	38.6
WALDRON	5600	3/30	24	7.2	15.2	11.1
WALDRON PILLOW	5600	4/01	SP	7.9	14.7	10.4
WARM SPRINGS PILLOW	7800	4/01	SP	19.0	26.4	-
WEASEL DIVIDE	5450	3/28	90	36.1	38.5	37.2
WEST ROSEBUD	7500	3/31	33	8.3	9.7	13.0
WEST YELLOWSTONE	6700	3/30	41	12.5	12.1	12.8
WEST YELLOWSTONE PILLOW	6700	3/30	SP	11.0	11.2	9.4
WHISKEY CREEK	6800	3/30	67	24.2	27.2	21.8
WHISKEY CREEK PILLOW	6800	3/30	SP	18.5	22.0	18.4
WHITE MILL	8700	3/29	71	24.8	33.4	29.7
WHITE MILL PILLOW	8700	3/29	SP	21.9	29.7	27.3
WHITE PINE RIDGE	8850	3/31	30	7.1	5.4	5.9
WILLOW CREEK	6500	3/28	34	8.2	8.2	10.8
WOOD CREEK	5960	4/01	28	9.8	15.6	-
WOOD CREEK PILLOW	5960	4/01	SP	7.9	15.2	-
WRONG CREEK	5700	3/27	26	9.8	17.6	15.4
WRONG RIDGE	6800	3/27	39	13.6	24.4	21.5
WYOMING						
BALD MOUNTAIN (WY)	9380	3/29	67	19.3	21.6	25.2
BALD MOUNTAIN PILLOW (WY)	9380	3/29	SP	16.7	20.1	-
BEARTOOTH LAKE PILLOW (WY)	9270	3/31	SP	17.9	-	-
BURGESS R.S. (WY)	7880	3/29	32	6.6	7.4	9.3
BURGESS R.S. PILLOW (WY)	7880	3/29	SP	11.5	8.0	-
CANYON PILLOW (WY)	7940	4/01	SP	12.0	22.5	16.9
EAST ENTRANCE (WY)	6960	3/29	33	9.5	15.5	9.6
EVENING STAR PILLOW (WY)	9200	3/29	SP	16.1	-	-
FIVE SPRINGS FALLS (WY)	7620	3/31	18	4.6	6.0	8.4
LAKE CAMP (WY)	7780	3/29	37	8.8	12.3	10.1
LUPINE CREEK (WY)	7380	4/01	36	10.1	9.3	11.1
NORRIS BASIN (WY)	7500	4/02	32	8.4	13.5	11.8
OLD FAITHFUL (WY)	7400	4/01	52	16.4	-	-
PARKERS PEAK PILLOW (WY)	9400	3/31	SP	21.3	-	-
SYLVAN LAKE PILLOW (WY)	8420	4/02	SP	21.4	26.7	-
SYLVAN PASS (WY)	7100	3/29	38	10.7	17.5	14.5
THUMB DIVIDE (WY)	7980	3/29	61	18.2	25.0	22.1
TOGWOTEE PASS (WY)	9580	3/30	82	27.3	39.3	30.9
TROUT CREEK PILLOW (WY)	8400	4/01	SP	6.4	-	-
WOLVERINE (WY)	7650	3/30	40	11.7	15.1	13.6
WOLVERINE PILLOW (WY)	7650	3/30	SP	10.0	15.3	-
TO NIS PEAK PILLOW (WY)	8350	4/01	SP	14.8	25.8	23.6

SNOW April 1, 1983

DRAINAGE BASIN and/or SNOW COURSE NAME	Elevation	THIS YEAR Date of Survey	Snow Depth (inches)	Water Content (inches)	PAST RECORD Water Content (inches) Last Year	Average
BRITISH COLUMBIA						
FERNIE (BC)	3510	3/29	13	4.6	9.6	7.8
FERNIE EAST (BC)	4100	3/29	42	15.5	18.3	15.2
FERNIE NE (BC)	3510	3/28	22	8.2A	12.1	10.2
FIDELITY MOUNTAIN (BC)	6130	3/28	99	34.9	46.4	43.7
FIELD (BC)	4200	3/31	17	4.7A	7.8	5.4
GLACIER (BC)	4100	3/29	58	21.2	32.2	27.7
GRAY CREEK LOWER (BC)	5080	3/30	46	15.2	21.4	19.3
GRAY CREEK UPPER (BC)	6260	3/31	78	25.9	34.9	32.2
KICKING HORSE (BC)	5410	3/31	39	11.4	15.4	14.9
KIMBERLEY (BC)	3800	3/30	12	2.5A	8.4	6.9
KIMBERLEY LOWER VOR (BC)	4490	3/29	17	5.1	9.6	7.5
KIMBERLEY MIDDLE VOR (BC)	5510	3/29	36	9.8	13.9	12.6
KIMBERLEY UPPER VOR (BC)	7020	3/29	52	15.1	21.1	20.5
MORRISSEY RIDGE (BC)	6100	3/28	74	28.4	30.7	28.9
MOUNT ABBOT (BC)	6490	3/28	113	40.9	53.9	50.5
MOYIE MOUNTAIN (BC)	6360	3/31	52	17.6	-	18.0
SINCLAIR PASS (BC)	4490	3/31	13	3.3	7.2	5.5
SULLIVAN MINE (BC)	5080	3/30	37	11.6	15.2	14.5
UPPER ELK RIVER (BC)	4400	3/30	0	.0	6.1	6.6
IDAHO						
ABOVE BURKE (ID)	4100	3/31	41	15.4	21.4	24.7
BEAR MOUNTAIN (ID)	5400	3/28	147	66.1	75.1	64.2
BIG SPRINGS (ID)	6500	3/30	60	23.2	24.0	22.0
BLACK CANYON (ID)	7960	3/31	104	40.1	-	35.4
BLACK MOOSE (ID)	8160	3/31	113	45.2	-	40.3
BLUE LEDGE MINE (ID)	6900	3/30	80	31.0	16.7	17.7
CAMP CREEK (ID)	6580	3/29	55	17.8	11.5	12.0
CRAB CREEK (ID)	6860	3/30	80	28.8	15.2	-
CRAB CREEK PILLOW (ID)	6860	3/30	SP	30.3	-	-
HUMBOLDT GULCH (ID)	4250	3/31	33	11.6	-	-
HUMBOLDT GULCH PILLOW (ID)	4250	4/01	SP	10.1	-	-
ISLAND PARK (ID)	6290	3/30	58	20.7	20.4	17.2
ISLAND PARK PILLOW (ID)	6290	4/01	SP	21.0	-	-
KILGORE (ID)	6320	3/30	40	15.2	13.2	11.5
KIT CARSON (ID)	4950	3/31	15	4.7	13.1	9.1
LATHAM SPRINGS (ID)	7630	3/30	92	36.4	-	34.8
LOLO PASS (ID)	5230	4/02	58	22.0	34.3	32.6
LOOKOUT (ID)	5250	3/31	90	33.0	37.6	37.1
LOOKOUT PILLOW (ID)	5250	4/01	SP	32.4	-	-
LUCKY DOG (ID)	6860	3/30	80	31.2	-	26.0
MOOSE CREEK (ID)	6200	4/01	54	18.4	22.0	17.1
MOOSE CREEK PILLOW (ID)	6200	4/01	SP	19.9	-	-
MOSQUITO RIDGE (ID)	5200	4/01	108	42.6	41.8	40.2
MOSQUITO RIDGE PILLOW (ID)	5200	4/01	SP	43.9	-	-
SAVAGE PASS (ID)	6170	3/31	66	23.0	34.3	28.6
SAWTELL MOUNTAIN (ID)	8720	3/30	137	51.0	48.8	35.1
SMITH CREEK (ID)	4800	3/30	122	51.8	52.8	48.8
SUNSET (ID)	5540	4/01	79	28.4A	37.0	36.2
SUNSET PILLOW (ID)	5540	4/01	SP	35.3	-	-
TARGHEE PASS (ID)	6980	3/30	60	20.1	16.8	17.1
VALLEY VIEW (ID)	6680	3/30	63	21.9	19.8	18.4
WHITE ELEPHANT (ID)	7710	3/30	101	35.1	34.4	25.6
WHITE ELEPHANT PILLOW (ID)	7710	4/01	SP	37.3	-	-

SNOW April 1, 1983

DRAINAGE BASIN and/or SNOW COURSE NAME	Elevation	THIS YEAR Date of Survey	Snow Depth (inches)	Water Content (inches)	PAST RECORD Water Content (inches) Last Year	Average
ALBERTA						
AKAMINA (AL)	5810	3/28	55	19.8	26.1	-
ALLISON PASS (AL)	6490	3/31	50	15.7	22.7	20.1
BOW RIVER (AL)	5080	3/28	32	8.1	9.2	8.3
BOW RIVER SUMMIT (AL)	6660	3/30	47	13.4	13.9	15.0
CHATEAU LAWN (AL)	5710	3/28	40	10.9	11.8	10.9
CUTHEAD LAKE (AL)	7250	3/30	43	11.9	15.3	16.8
HIGHWOOD SUMMIT BUSH (AL)	7250	3/29	43	12.8	12.0	15.7
LARCH VALLEY (AL)	7740	3/30	57	16.1	-	-
LEE CREEK Q (AL)	4890	3/29	18	6.2	7.9	7.3
LITTLE ELBOW SUMMIT (AL)	7090	3/29	38	10.9	10.5	12.0
MIDDLE DRYWOOD (AL)	5150	3/30	7	0.7	2.9	1.9
MIRROR LAKE (AL)	6590	3/30	39	11.2	11.6	11.9
MIST CREEK (AL)	5740	3/29	28	8.0	9.8	8.1
MOUNT SKOKI (AL)	6740	3/30	44	11.9	14.4	14.3
MUD LAKE (AL)	6200	3/29	40	11.7	16.7	14.6
NIGEL CREEK (AL)	6400	3/29	44	13.0	15.3	17.0
PIPESTONE UPPER (AL)	5300	3/28	35	9.0	11.2	8.0
PTARMIGAN HUT (AL)	7150	3/30	46	12.8	16.6	16.6
SUNSHINE VILLAGE (AL)	7300	3/31	63	20.2	25.9	25.5
SUNWAPTA FALLS (AL)	4590	3/29	21	5.1	7.6	8.2
THREE ISLE LAKE (AL)	7090	3/29	62	19.8	25.7	-
WILKINSON SUMMIT BUSH (AL)	6490	3/30	19	4.4	6.8	9.0
WILKINSON SUMMIT OPEN (AL)	6490	3/30	17	3.7	6.2	7.6

Average based on 1963-77 period. A - Aerial observation; water content estimated.
SP - Snow Pillow observations; water content only.

Buildings in old mining areas high in the mountain watersheds that are usually covered with snow show the effects of this year's low snowfall.

Columbia River Drainage

STREAMFLOW FORECASTS

BASIN, STREAM and/or FORECAST POINT	THIS YEAR FORECAST Thousand Acre Feet	THIS YEAR FORECAST Percent of Average	PAST RECORD THOUSAND ACRE FEET Last Year	PAST RECORD THOUSAND ACRE FEET Average	THIS YEAR FORECAST Thousand Acre Feet	THIS YEAR FORECAST Percent of Average	PAST RECORD THOUSAND ACRE FEET Last Year	PAST RECORD THOUSAND ACRE FEET Average	THIS YEAR FORECAST Thousand Acre Feet	THIS YEAR FORECAST Percent of Average	PAST RECORD THOUSAND ACRE FEET Last Year	PAST RECORD THOUSAND ACRE FEET Average
PERIOD	April - September				April - July				April - June			
KOOTENAI RIVER below Libby Dam (1)	6,670	92	7,017	7,246	5,690	92	5,878	6,178				
FISHER RIVER near Libby	204	76		270	190	75		253				
YAAK RIVER near Troy	480	89		537	455	88		514				
KOOTENAI RIVER at Leonia (1)	8,060	91	8,643	8,883	7,010	91	7,413	7,727	5600	91	5,921	6,150
INFLOW MOULTON RESERVOIR nr BUTTE (Million Gallons)					212	74	360	286	192	74	328	260
WARM SPRINGS CREEK AT MEYERS DAM near Anaconda (2)	42.3	83		50.7	34.5	84		41.2				
FLINT CREEK near Southern Cross (3)	13.5	73	24.6	18.5	11.2	73	20.0	15.4				
FLINT CREEK below Boulder Creek (4)	57.0	73		77.6	45.0	73		61.3				
INFLOW LOWER WILLOW CREEK RESERVOIR near Hall (5)	11.2	66	15.9	16.9	10.6	66	15.1	16.0				
MIDDLE FORK ROCK CREEK near Philipsburg	66.6	84		78.8	60.0	84		71.1				
NEVADA CREEK near Finn	16.0	68		23.6	14.7	67		21.8				
BLACKFOOT RIVER near Bonner	750	74		1,017	670	73		920	580	73		794
CLARK FORK RIVER above Milltown (6)	680	81		843	590	81		730	495	81		613
CLARK FORK RIVER above Missoula	1,430	77	2,260	1,859	1,260	76	2,038	1,651	1,075	76	1,645	1,408
WEST FORK BITTERROOT RIVER near Conner (7)	137	73		187	125	73		172				
BITTERROOT RIVER near Darby	425	71		602	390	71		552	345	72		480
SKALKAHO CREEK near Hamilton	45.8	80		57.4	39.5	79		49.8				
BURNT FORK CREEK near Stevensville (8)	32.0	82		38.8	27.7	82		33.6				
BITTERROOT RIVER at Missoula (9)	1,100	71		1,543	1,010	71		1,416	870	72		1,211
CLARK FORK RIVER below Missoula	2,530	74		3,405	2,270	74		3,069	1,945	74		2,618
CLARK FORK RIVER at St. Regis	3,290	73	5,715	4,521	2,950	72	5,292	4,078	2,510	72	4,309	3,492
NORTH FORK FLATHEAD RIVER near Columbia Falls	1,700	86		1,969	1,530	86		1,782	1,300	87		1,498
MIDDLE FORK FLATHEAD RIVER near West Glacier	1,510	79	2,083	1,911	1,390	79	1,925	1,750	1,180	80	1,544	1,470
SOUTH FORK FLATHEAD RIVER near Columbia Falls (10)	1,780	77	2,559	2,302	1,660	77	2,428	2,159	1,460	77	2,034	1,884
FLATHEAD RIVER at Columbia Falls (10)	1,510	81	6,549	6,330	4,710	81	6,080	5,827	4,050	82	4,990	4,964
SWAN RIVER near Big Fork	574	84		681	503	84		596				
FLATHEAD RIVER near Polson (11)	6,020	81	8,005	7,394	5,510	81	7,323	6,806	4,700	81	5,910	5,779
CLARK FORK RIVER near Plains (11)	9,510	77	14,103	12,340	8,650	77	12,939	11,222	7,320	77	10,447	9,507
THOMPSON RIVER near Thompson Falls	232	88		263	208	89		234				
PROSPECT CREEK at Thompson Falls	121	85		143	112	84		133				
CLARK FORK RIVER at Whitehorse Rapids (12)	10,700	78		13,781	9,720	78		12,519	8,300	78		10,633

(1) Adjusted for storage in Lake Koocanusa.
(2) Adjusted for storage in Silver Lake, diversions to and pumping from Georgetown Lake.
(3) Adjusted for storage in Georgetown Lake, diversions from and pumping to Silver Lake.
(4) Sum Flint Creek at Maxville and Boulder Creek at Maxville.
(5) Sum of North Fork Lower Willow Creek near Hall and South Fork Lower Willow Creek near Hall.
(6) Difference in observed flow Clark Fork above Missoula and Blackfoot near Bonner.
(7) Adjusted for storage in Painted Rocks Reservoir.
(8) Adjusted for diversion into Sunset Highline Canal.
(9) Difference in observed flow Clark Fork above and below Missoula.
(10) Adjusted for storage in Hungry Horse Reservoir.
(11) Adjusted for storage in Hungry Horse Reservoir and Flathead Lake.
(12) Adjusted for storage in Hungry Horse Reservoir, Flathead Lake and Noxon Rapids Reservoir.

ALL FORECASTS PREPARED IN COOPERATION WITH THE NATIONAL WEATHER SERVICE

SUMMARY of SNOW MEASUREMENTS

(COMPARISON WITH PREVIOUS YEARS)

RIVER BASIN and/or SUB-WATERSHED	Number of Courses Averaged	THIS YEAR'S SNOW WATER AS PERCENT OF Last Year	THIS YEAR'S SNOW WATER AS PERCENT OF Average †
East Kootenay/BC.	13	69	75
Kootenai/Montana	25	84	90
Kootenai above Bonners Ferry...	38	79	86
Little Bitterroot	5	71	76
N. Fk. Flathead..	8	91	90
M. Fk. Flathead..	9	68	75
S. Fk. Flathead..	12	80	84
Swan	9	88	92
Flathead	43	81	85
Stillwater & Whitefish.....	5	77	82
Clark Fork above Blackfoot	35	68	81
Blackfoot	21	57	68
Upper Clark Fork above Missoula .	56	63	75
Bitterroot	19	66	80
Lower Clark Fork below Missoula .	18	78	83
Clark Fork (Total w/o Flathead)...	93	68	79
Pend O'Reille (Clark Fork & Flathead)	136	73	82
Columbia (Pend O'Reille & Kootenai)	131	72	81

WATER SUPPLY OUTLOOK

Expressed as "Poor, Fair, Average, Excellent" With Respect to Usual Supply

STREAM or AREA	Flow Period: Spring Season	Flow Period: Late Season
Tobacco	Fair	Fair
Little Bitterroot....	Fair	Fair
Mission Valley	Avg	Fair
Flint Creek	Fair	Poor
Upper Clark Fork	Fair	Fair
Nevada Creek	Poor	Poor
Blackfoot	Poor	Poor
West-side Bitterroot	Fair	Poor
East-side Bitterroot	Fair	Poor
Bitterroot River	Fair	Poor
Lower Clark Fork	Fair	Fair

Runoff forecasts below average

Forecasts for spring and summer streamflow have been lowered in most drainages. Most watersheds in the Clark Fork drainage are expected to produce 20 to 30 percent less than average runoff. Streams in the Flathead River basin are also forecast at 75 to 85 percent of average. The Kootenai River is predicted to have a little higher runoff.

Irrigation water shortages will begin developing by mid to late June on smaller streams in the upper Clark Fork basin and by late June to early July on larger streams and rivers.

Irrigators not having stored water need to be prepared for the anticipated low flows.

Snowpack levels remain low

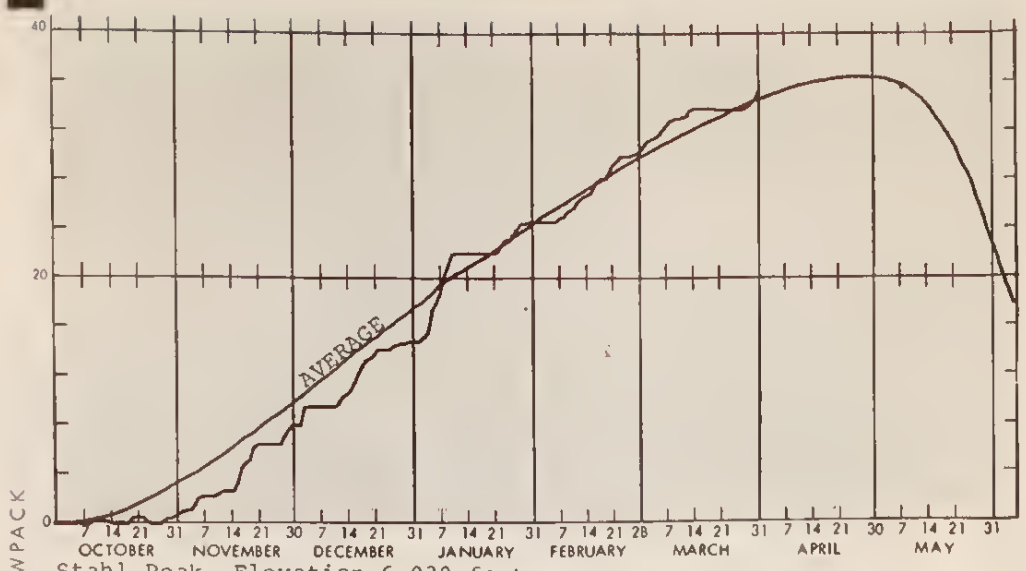
All areas show below average amounts of water stored in the mountain snowpack. Most of the drainages have 75-85 percent of their average water equivalent. Exceptions are the Kootenai River drainage, parts of the Swan and Mission Mountains, and a small area south of Butte which are all within 10 percent of average.

The lowest snowpack levels are in the upper Blackfoot River drainage and in the Philipsburg-Drummond areas. Some snowmelt has occurred at most low elevations during March.

Shallow snowpacks are common in most mountainous areas this season.

COLUMBIA RIVER DRAINAGE
MONTANA
MOUNTAIN SNOW WATER EQUIVALENT

SNOW PILLOW DATA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AVERAGE
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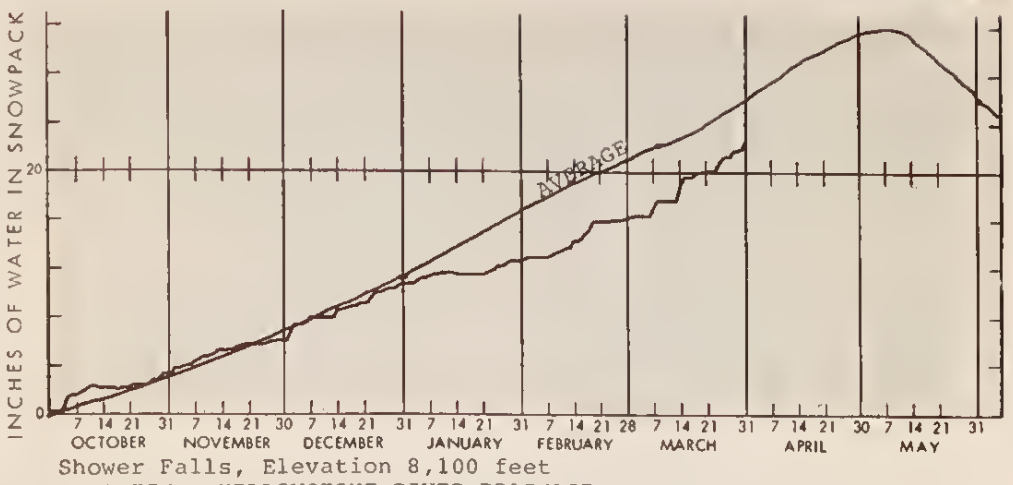
OCTOBER NOVEMBER DECEMBER JANUARY FEBRUARY MARCH APRIL MAY

Stahl Peak, Elevation 6,030 feet
KOOTENAI - FLATHEAD RIVER DRAINAGES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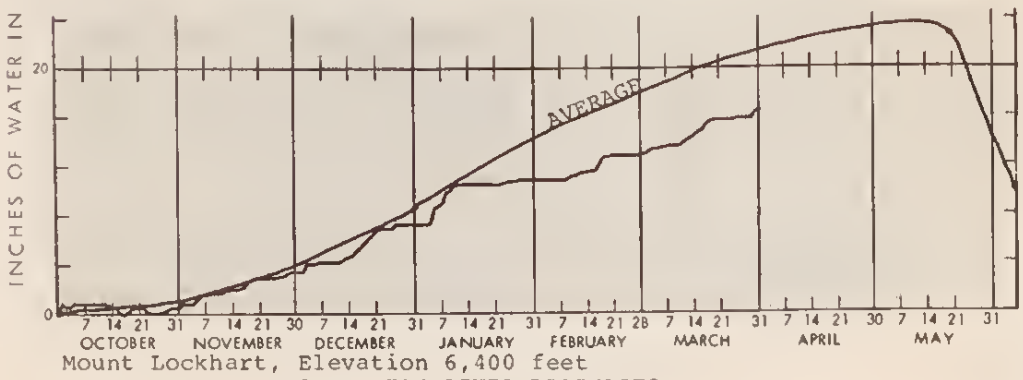
OCTOBER NOVEMBER DECEMBER JANUARY FEBRUARY MARCH APRIL MAY

Shower Falls, Elevation 8,100 feet
GALLATIN - YELLOWSTONE RIVER DRAINAGE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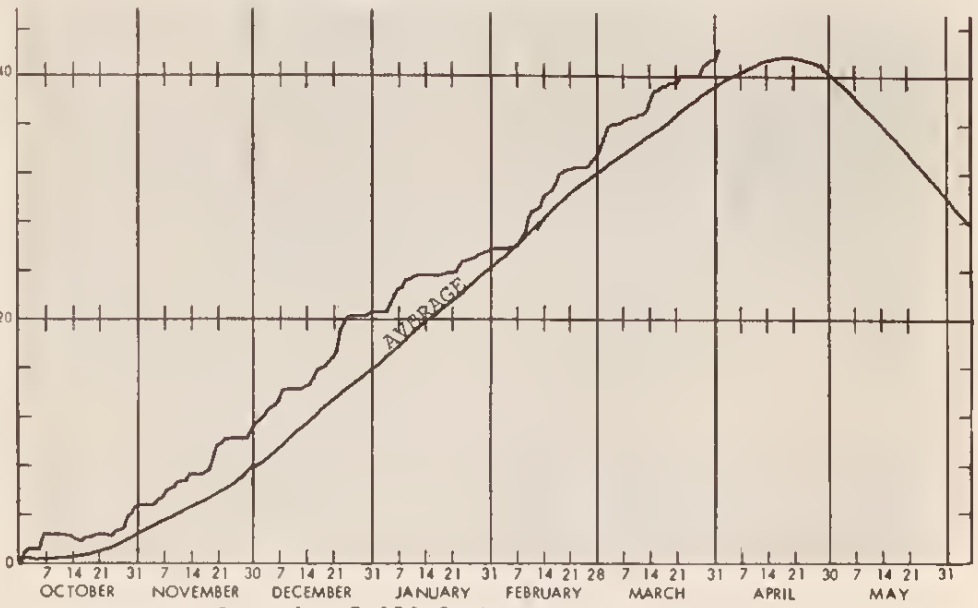
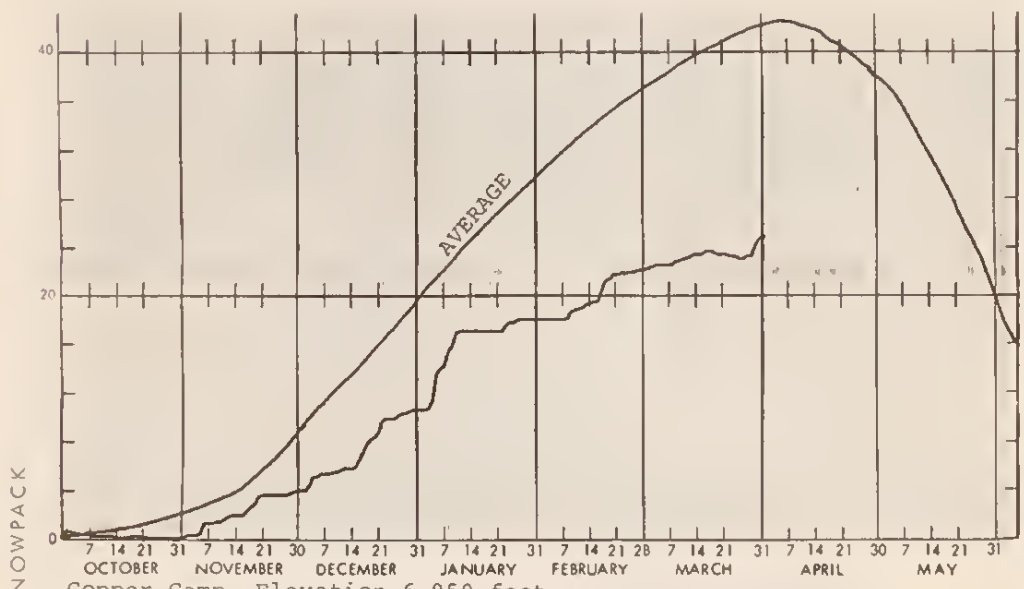
OCTOBER NOVEMBER DECEMBER JANUARY FEBRUARY MARCH APRIL MAY

Mount Lockhart, Elevation 6,400 feet
FLATHEAD - MARIAS - TETON RIVER DRAINAGES



Black Bear, Elevation 7,950 feet
MADISON RIVER DRAINAGE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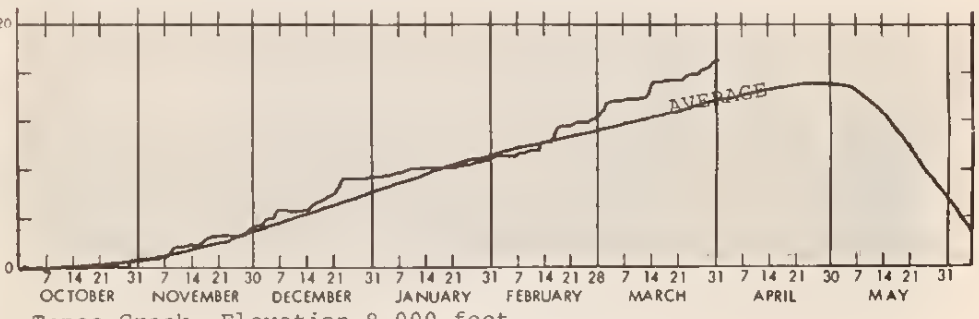
OCTOBER NOVEMBER DECEMBER JANUARY FEBRUARY MARCH APRIL MAY

Copper Camp, Elevation 6,950 feet
BLACKFOOT RIVER DRAINAGE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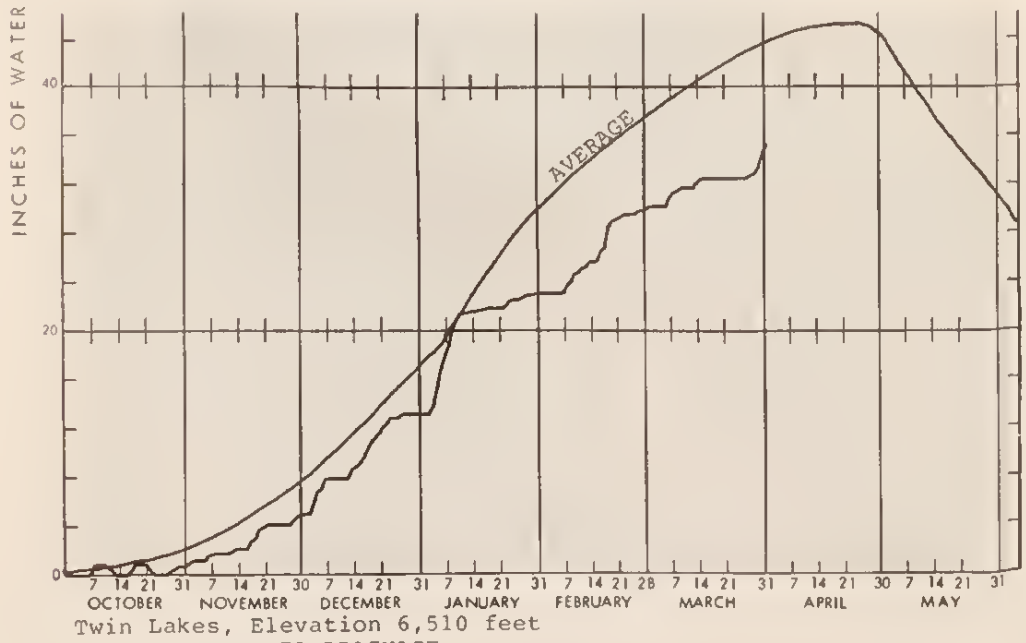
OCTOBER NOVEMBER DECEMBER JANUARY FEBRUARY MARCH APRIL MAY

Tepee Creek, Elevation 8,000 feet
MADISON - BEAVERHEAD - RUBY RIVER DRAINAGE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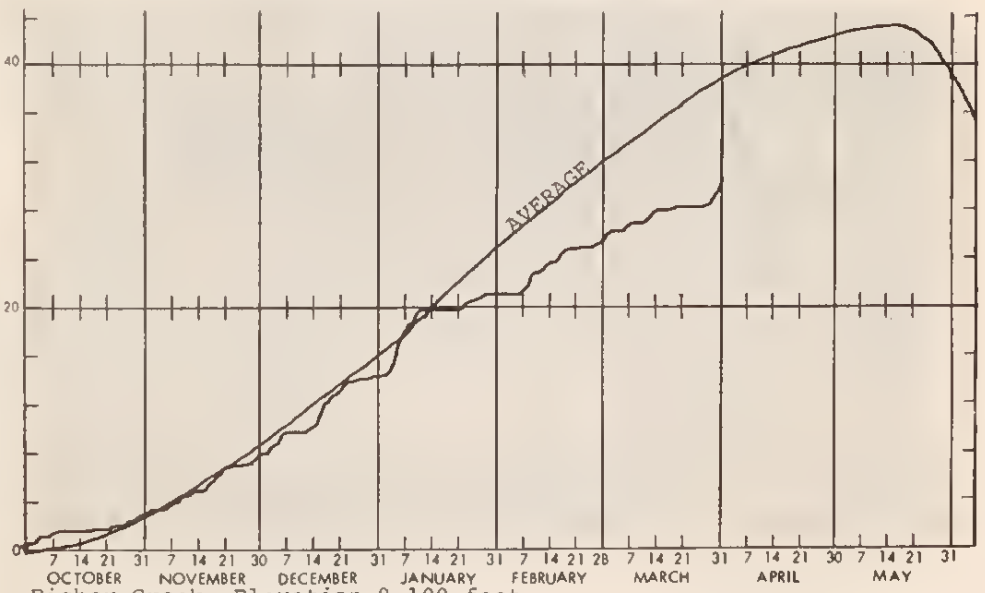
OCTOBER NOVEMBER DECEMBER JANUARY FEBRUARY MARCH APRIL MAY

Twin Lakes, Elevation 6,510 feet
BITTERROOT RIVER DRAINAGE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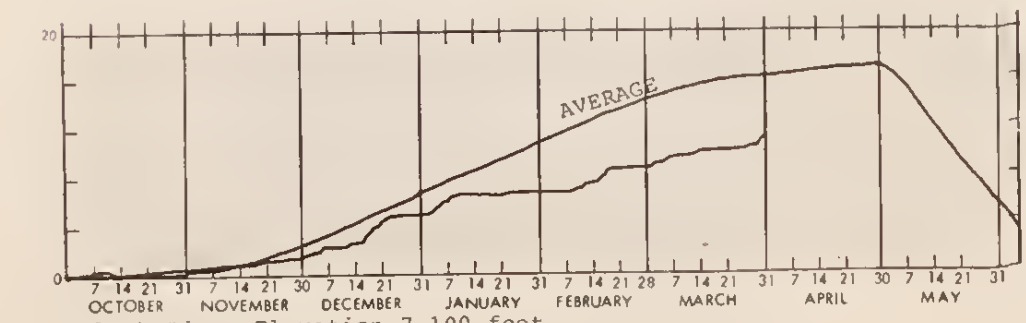
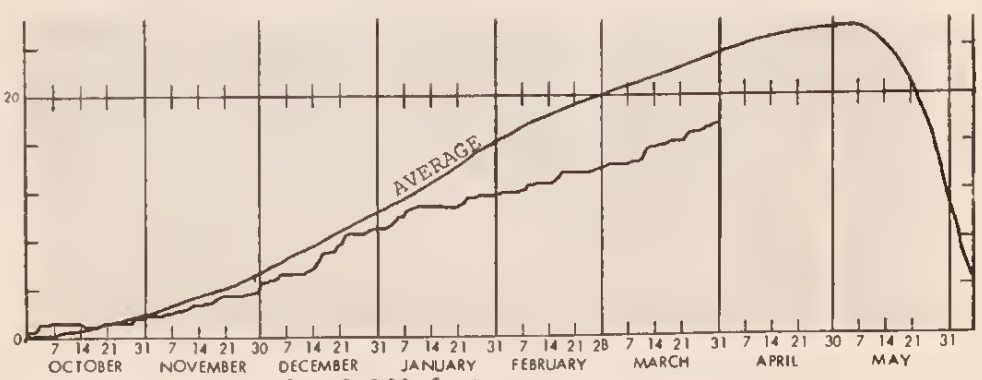
OCTOBER NOVEMBER DECEMBER JANUARY FEBRUARY MARCH APRIL MAY

Fisher Creek, Elevation 9,100 feet
YELLOWSTONE - BOULDER - STILLWATER - CLARK'S FORK RIVER DRAINAGES



Black Pine, Elevation 7,100 feet
UPPER CLARK FORK RIVER DRAINAGE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OCTOBER NOVEMBER DECEMBER JANUARY FEBRUARY MARCH APRIL MAY

Spur Park, Elevation 8,100 feet
JUDITH RIVER DRAINAGE

RESERVOIR STORAGE (Thousand Acre Feet) END OF MONTH March 31, 1983

Basin or Stream	RESERVOIR	Usable Capacity	Usable Storage: This Year	Usable Storage: Last Year	Usable Storage: Average
	COLUMBIA				
Kootenai	Koocanusa	5,748.2	1,956.0	1,904.0	---
Flathead	Hungry Horse	3,451.0	2,699.0	2,158.0	2,016.0
	Flathead Lake	1,791.0	743.2	750.4	775.7
	Camas (4)	45.2	34.4	27.0	23.8
	Mission Valley (8)	100.3	46.7	24.4	41.1
Clark Fork	Georgetown Lake	31.0	24.1	28.5	24.0
	Lower Willow Creek	4.9	2.3	---	1.9
	Nevada Creek	12.6	8.9	8.9	7.9
	Noxon Rapids	334.6	322.2	312.1	191.9
Bitterroot	Painted Rocks	31.7	---	---	17.6
	Como	34.9	---	---	15.6
	MISSOURI				
Beaverhead	Lima	84.0	46.3	29.0	42.6
	Clark Canyon	257.2	179.9	167.3	143.7
Ruby	Ruby	38.8	31.9	---	30.9
Madison	Hebgen Lake	377.5	258.4	260.8	245.5
	Ennis Lake	41.0	17.7	30.1	34.4
Gallatin	Middle Creek	8.0	3.8	3.8	4.0
Missouri	Canyon Ferry	2,043.0	1,626.0	1,436.0	1,527.0
	Hauser & Helena	61.9	62.5	63.0	59.8
	Lake Helena	10.4	10.7	10.9	9.8
	Holter Lake	81.9	75.4	77.2	66.2
	Fort Peck Lake	18,910.0	15,700.0	14,200.0	15,480.0
Smith	Smith River	10.6	9.5	8.1	7.7
	Newlan Creek	12.4	8.8	10.2	---
Musselshell	Bair	7.0	6.2	4.6	5.4
	Martinsdale	23.1	18.8	11.8	10.1
	Deadman's Basin	72.2	67.7	---	52.6
Sun	Gibson	99.1	67.0	56.2	47.0
	Willow Creek	32.2	24.7	24.7	22.8
	Pishkun	32.0	19.7	19.8	16.5
Marias	Lower Two Medicine	11.9	---	---	6.9
	Four Horns	19.2	---	---	12.3
	Swift	30.0	16.8	12.0	16.9
	Lake Frances	111.9	85.3	78.4	71.9
Milk	Elwell (Tiber)	1,347.0	704.3	535.2	551.9
	Beaver Creek	3.5	3.1	2.5	1.9
	Fresno	127.2	34.9	54.9	89.1
	Nelson	66.8	45.6	35.6	41.5
	HUDSON BAY				
St. Mary's	Lake Sherburne	64.3	20.5	20.8	25.1
	YELLOWSTONE				
Stillwater	Mystic Lake	21.0	1.5	0.6	4.3
Clark's Fork	Cooney	27.4	21.2	3.1	16.4
Tongue	Tongue River	68.0	13.4	18.4	44.0
Bighorn	Bighorn Lake	1,356.0	918.2	836.0	552.1

The winter snows are melting at many lower mountain sites.

SATELLITE SNOW COVER

DATA PROVIDED BY NOAA/NESS

Snow Covered Area

Scale 1:2,500,000

MISSOURI RIVER BASIN
Above
Canyon Ferry Dam

DATE	PERCENT SNOW COVER	AVERAGE SNOWLINE ELEVATION IN FEET
November 14, 1982	81	5290
November 1982	96	4300
November 24, 1982	95	4380
December 24, 1982	100	3800
January 18, 1983	76	5540
January 25, 1983	71	5770
February 3, 1983	76	5540
February 24, 1983	72	5720
March 10, 1983	65	6040
March 21, 1983	71	5770
March 26, 1983	72	5720

AGENCIES AND ORGANIZATIONS COOPERATING IN MONTANA SNOW SURVEYS

GOVERNMENT AGENCIES
- Canada
  - Department of the Environment
    - Atmospheric Environment Service
    - Water Management Service
  - British Columbia Ministry of Environment
    - Inventory and Engineering Branch, Hydrology Section
  - Alberta Environment
    - Technical Services Division
- Federal
  - Department of the Army - Corps of Engineers
  - Department of Agriculture - Forest Service
  - Soil Conservation Service
  - Department of Commerce - National Environmental Satellite Service
  - National Weather Service
  - Department of Interior - Bureau of Indian Affairs
  - Fish and Wildlife Service
  - Geological Survey
  - National Park Service
  - Bureau of Reclamation
  - Department of Energy - Bonneville Power Administration

STATE AGENCIES
- Montana Conservation Districts
- Montana Department of Fish, Wildlife and Parks
- Montana Department of Natural Resources and Conservation
- Montana State University - Agricultural Experiment Station
- University of Montana - School of Forestry

PRIVATE ORGANIZATIONS
- The Anaconda Company
- Big Sky of Montana
- Butte Water Company
- Flathead Valley Community College
- Montana Power Company

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